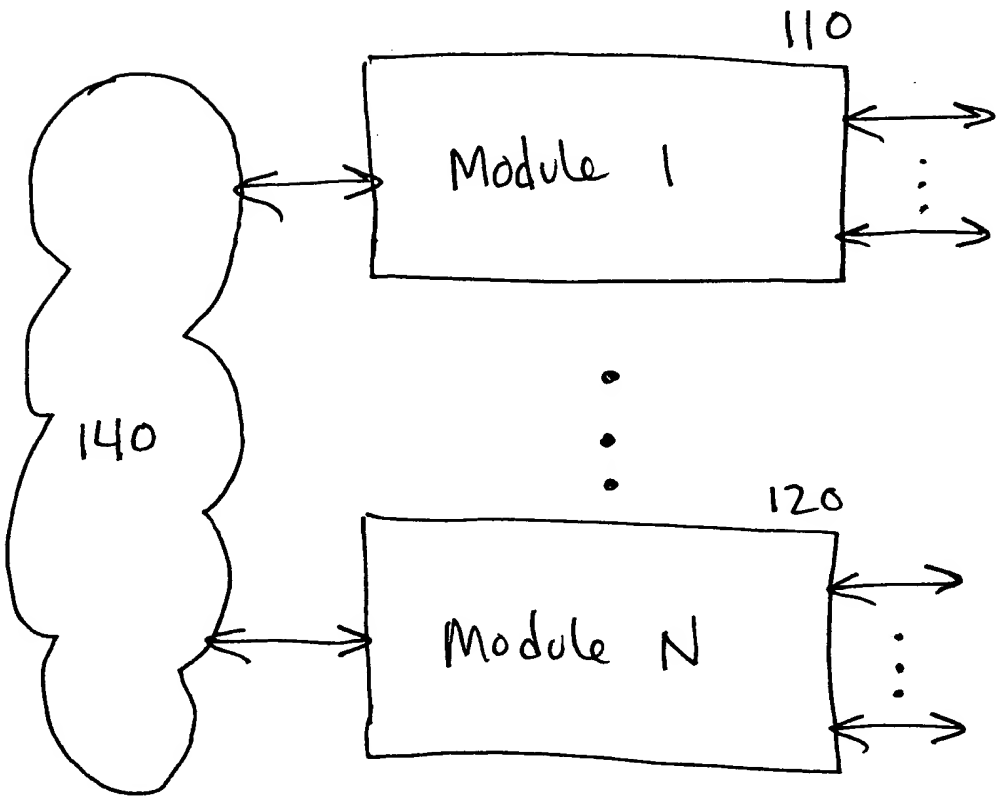

FIG. 1 100

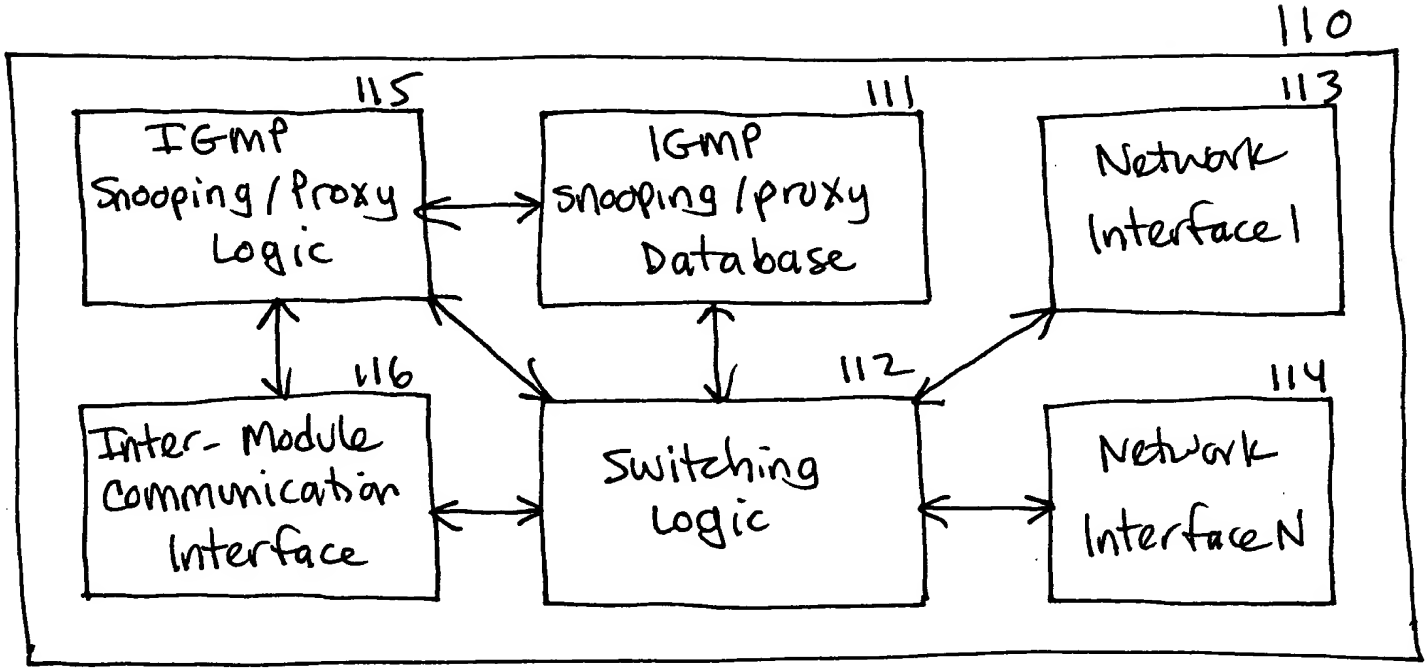
110
115
IGMP Snooping / Proxy Logic
111
IGMP snooping / proxy Database
113
Network Interface 1
116
Inter-Module Communication Interface
112
Switching Logic
114
Network Interface N

FIG. 2

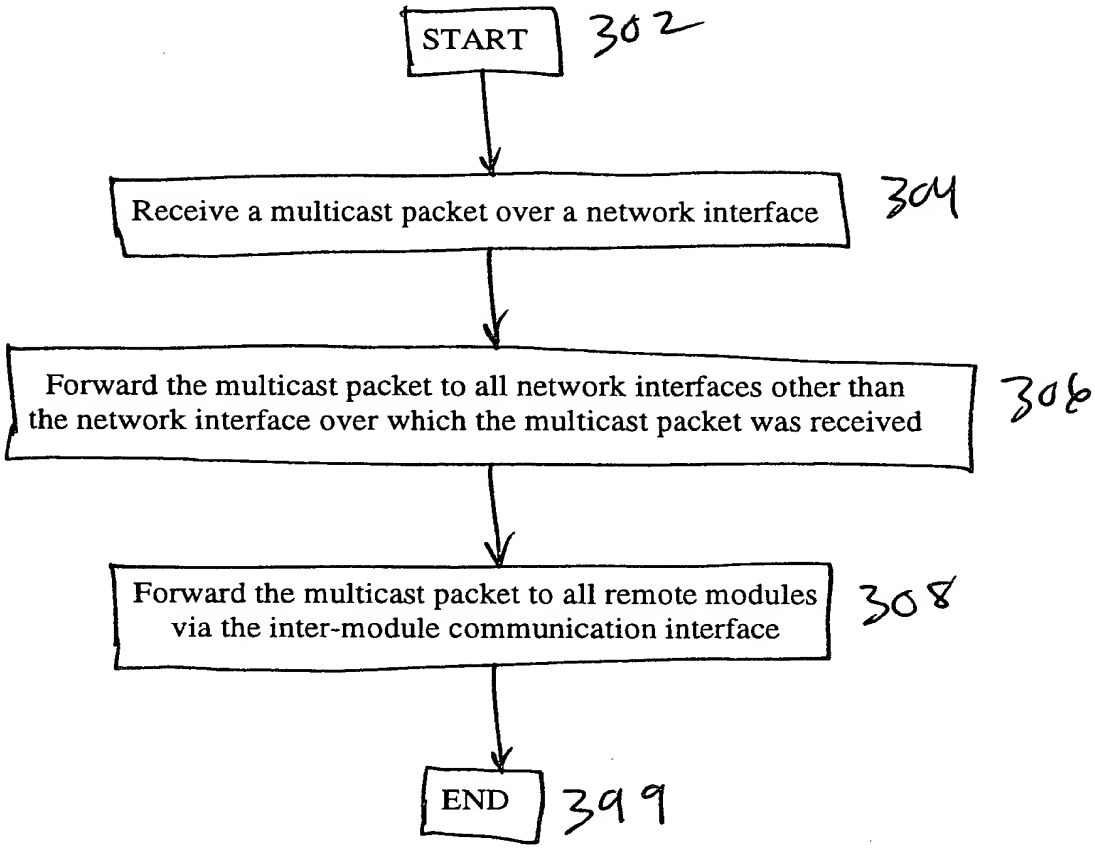
START
302
Receive a multicast packet over a network interface
304
Forward the multicast packet to all network interfaces other than the network interface over which the multicast packet was received
306
Forward the multicast packet to all remote modules via the inter-module communication interface
308
END
399

FIG. 3 300

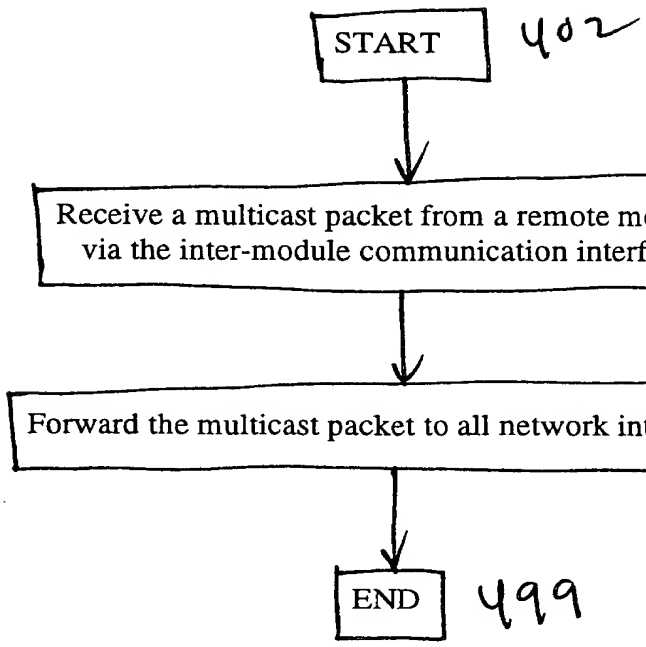
START
402
Receive a multicast packet from a remote module via the inter-module communication interface
404
Forward the multicast packet to all network interfaces
406
END
499

FIG. 4 400

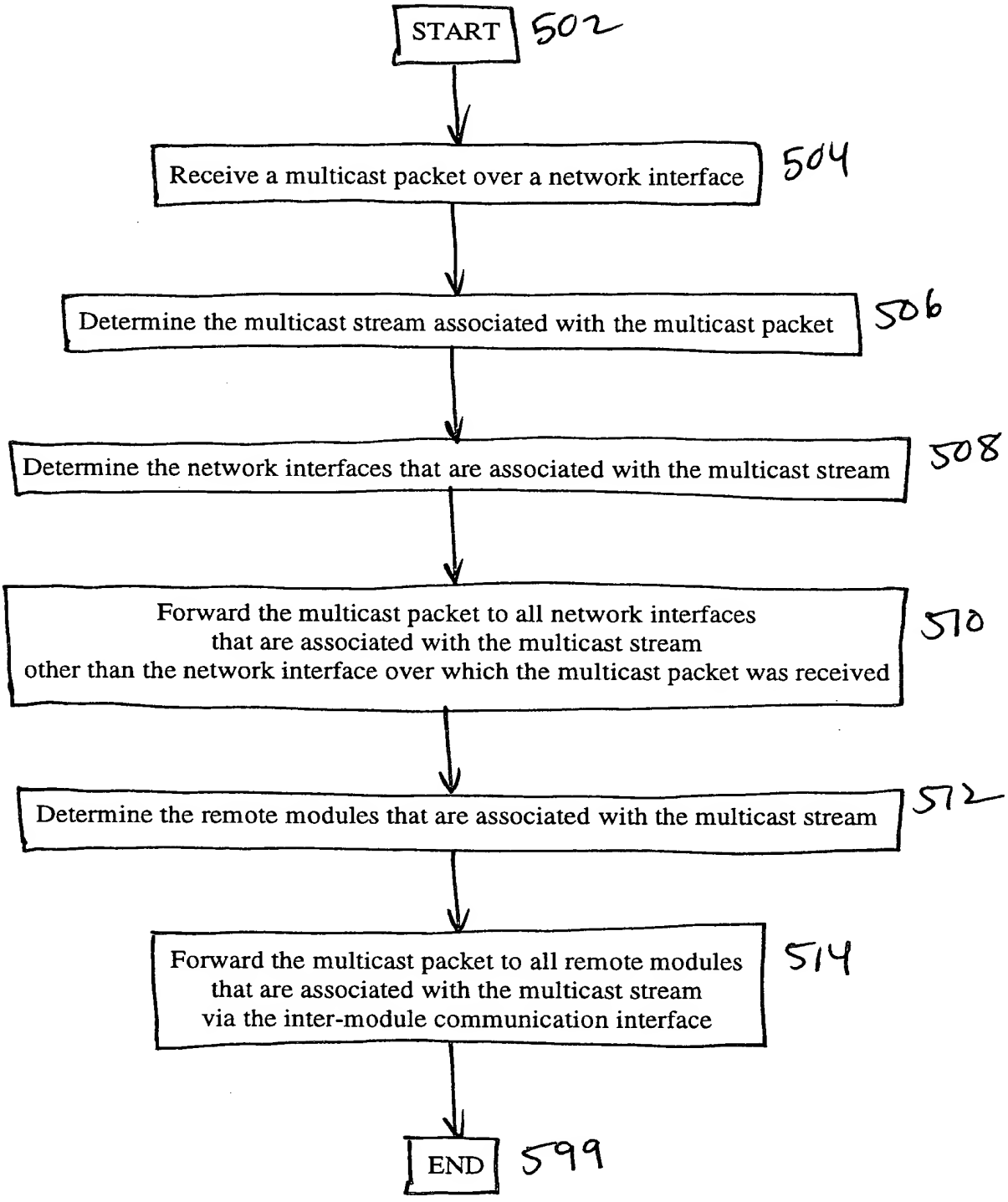
START
502
Receive a multicast packet over a network interface
504
Determine the multicast stream associated with the multicast packet
506
Determine the network interfaces that are associated with the multicast stream
508
Forward the multicast packet to all network interfaces
that are associated with the multicast stream
other than the network interface over which the multicast packet was received
510
Determine the remote modules that are associated with the multicast stream
512
Forward the multicast packet to all remote modules
that are associated with the multicast stream
via the inter-module communication interface
514
END
599

FIG. 5 500

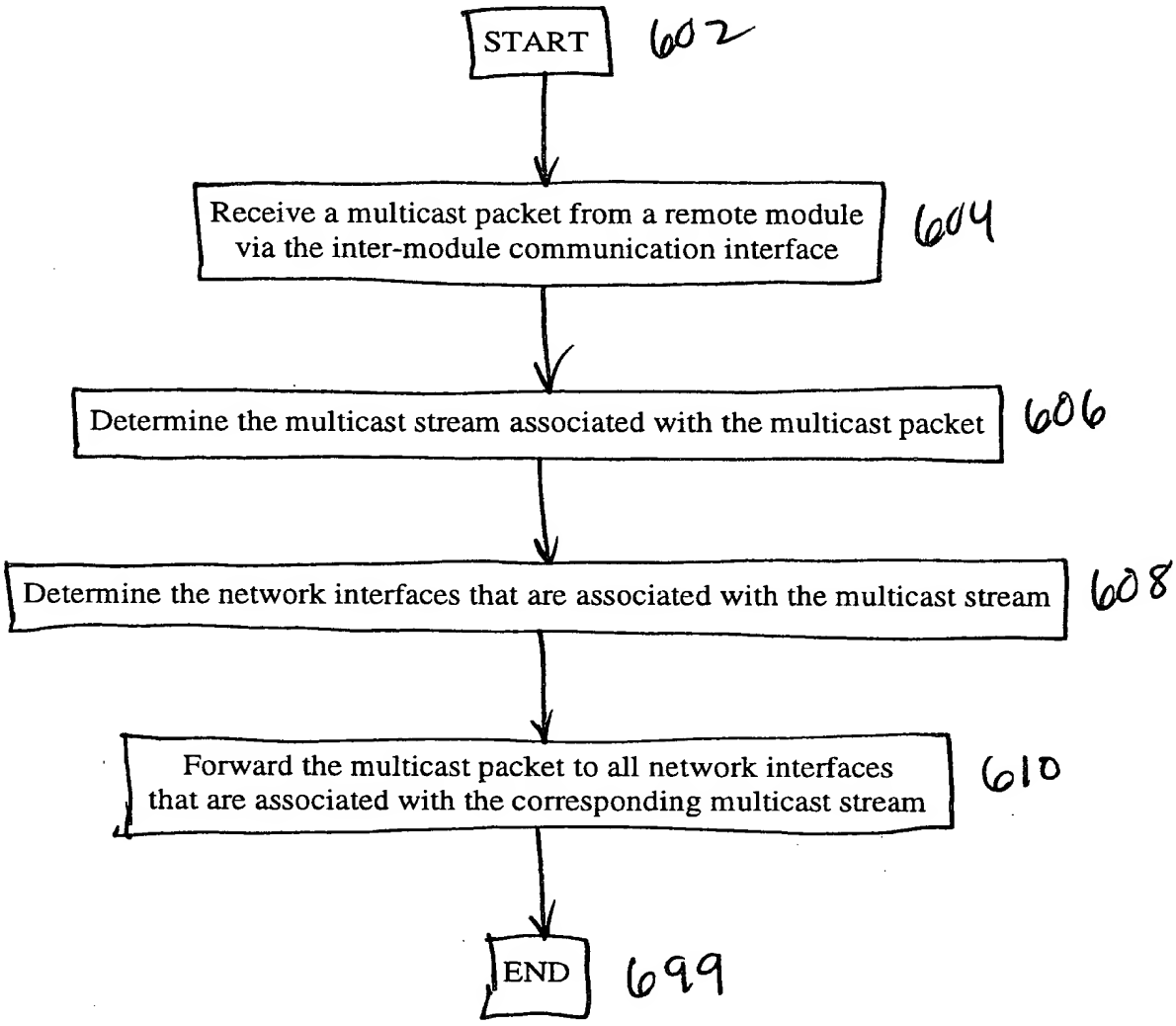
START
602
Receive a multicast packet from a remote module via the inter-module communication interface
604
Determine the multicast stream associated with the multicast packet
606
Determine the network interfaces that are associated with the multicast stream
608
Forward the multicast packet to all network interfaces that are associated with the corresponding multicast stream
610
END
699

FIG. 6 600

Last Host Address — 702

Last Router Address — 704

Host Interface List — 706

Router Interface List — 708

IGMP Version List — 710

FIG. 7

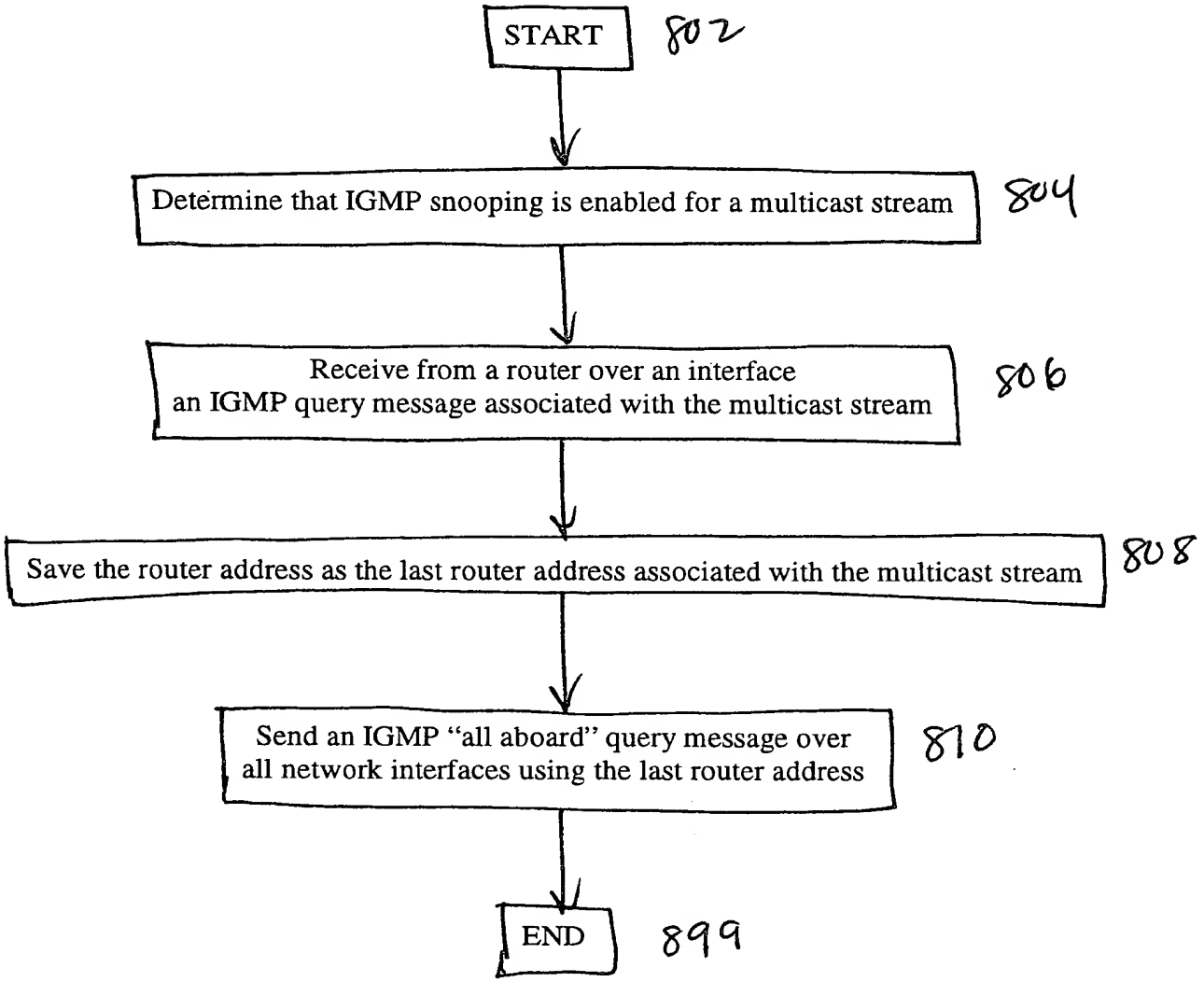
START
802
Determine that IGMP snooping is enabled for a multicast stream
804
Receive from a router over an interface
an IGMP query message associated with the multicast stream
806
Save the router address as the last router address associated with the multicast stream
808
Send an IGMP "all aboard" query message over
all network interfaces using the last router address
810
END
899

FIG. 8 800

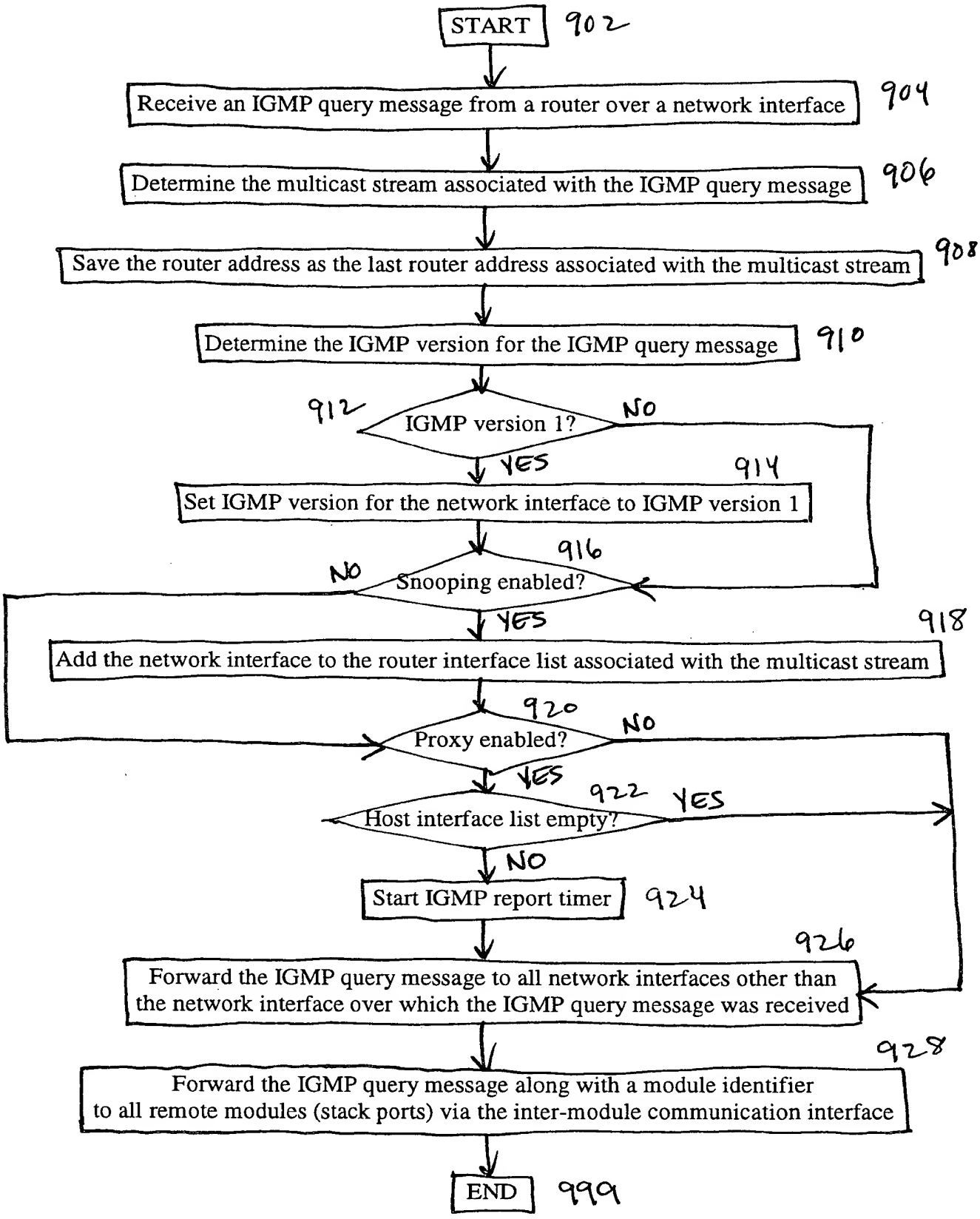
START
902
Receive an IGMP query message from a router over a network interface
904
Determine the multicast stream associated with the IGMP query message
906
Save the router address as the last router address associated with the multicast stream
908
Determine the IGMP version for the IGMP query message
910
912
IGMP version 1?
NO
YES
914
Set IGMP version for the network interface to IGMP version 1
916
NO
Snooping enabled?
YES
918
Add the network interface to the router interface list associated with the multicast stream
920
Proxy enabled?
NO
YES
922
Host interface list empty?
YES
NO
Start IGMP report timer
924
926
Forward the IGMP query message to all network interfaces other than the network interface over which the IGMP query message was received
928
Forward the IGMP query message along with a module identifier to all remote modules (stack ports) via the inter-module communication interface
END
999

FIG. 9 900

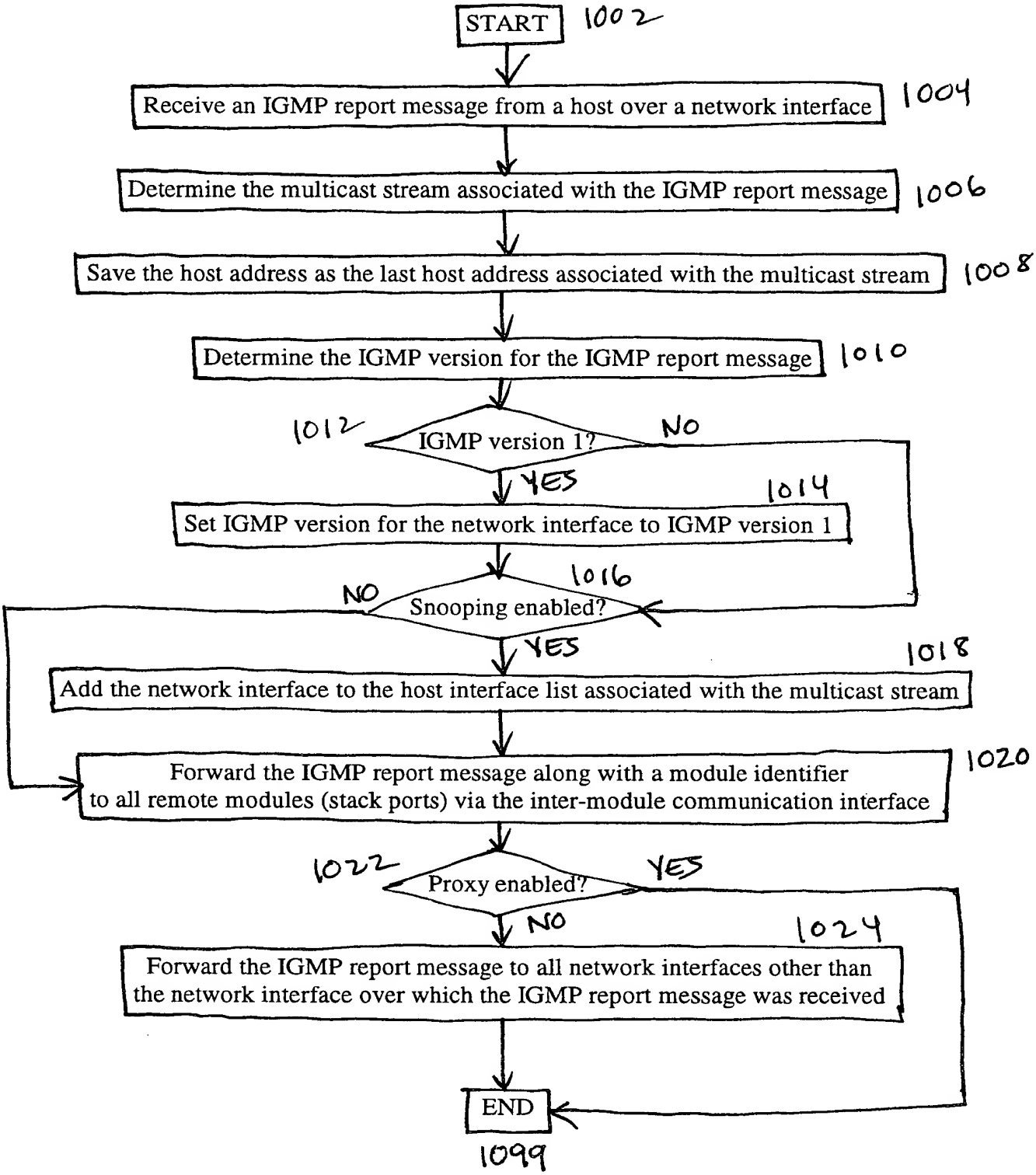
START
1002
Receive an IGMP report message from a host over a network interface
1004
Determine the multicast stream associated with the IGMP report message
1006
Save the host address as the last host address associated with the multicast stream
1008
Determine the IGMP version for the IGMP report message
1010
1012
IGMP version 1?
NO
YES
1014
Set IGMP version for the network interface to IGMP version 1
1016
NO
Snooping enabled?
YES
1018
Add the network interface to the host interface list associated with the multicast stream
Forward the IGMP report message along with a module identifier
to all remote modules (stack ports) via the inter-module communication interface
1020
1022
Proxy enabled?
YES
NO
1024
Forward the IGMP report message to all network interfaces other than
the network interface over which the IGMP report message was received
END
1099

FIG 10 1000

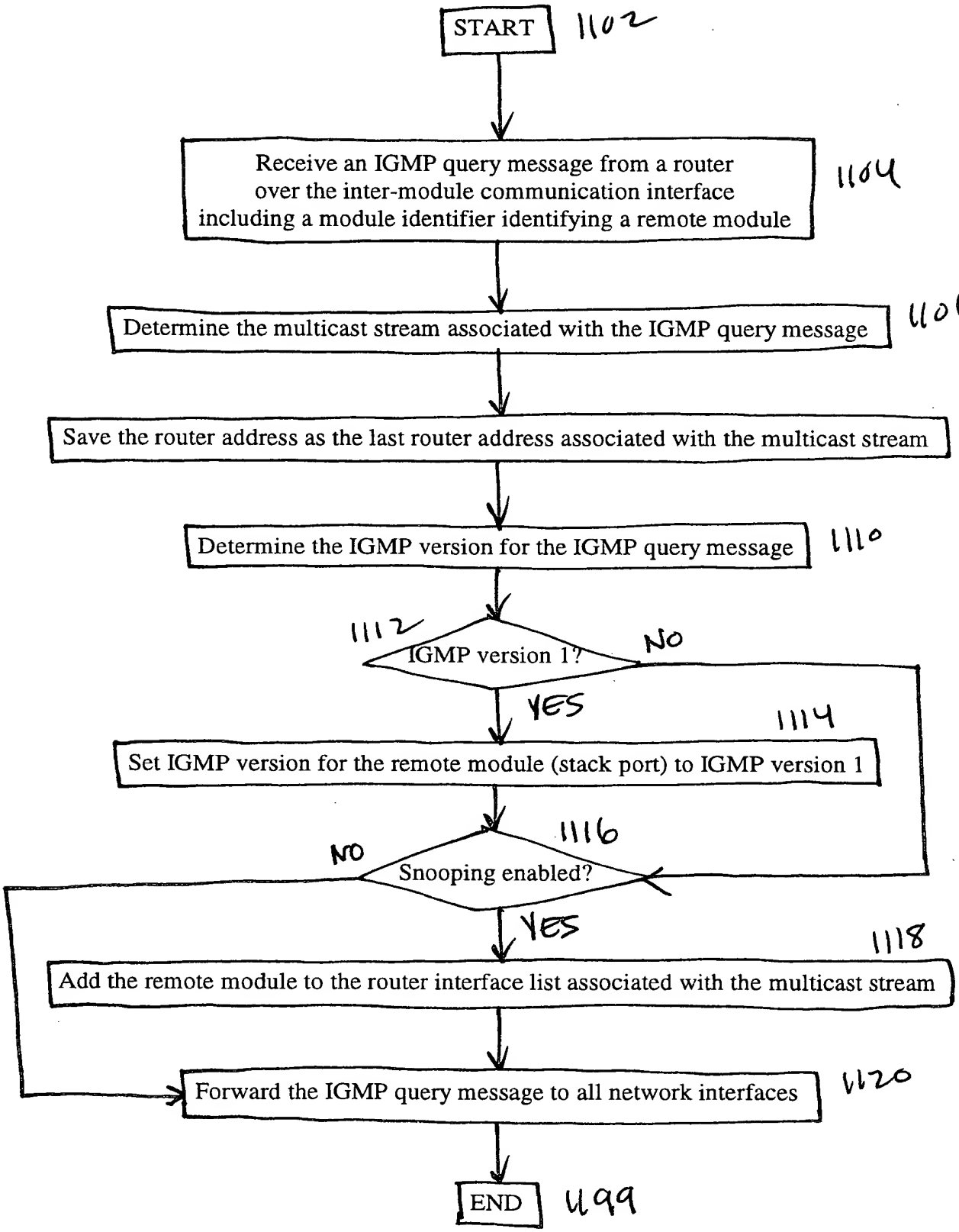
START
1102
Receive an IGMP query message from a router over the inter-module communication interface including a module identifier identifying a remote module
1104
Determine the multicast stream associated with the IGMP query message
1106
Save the router address as the last router address associated with the multicast stream
1108
Determine the IGMP version for the IGMP query message
1110
1112
IGMP version 1?
NO
YES
Set IGMP version for the remote module (stack port) to IGMP version 1
1114
1116
NO
Snooping enabled?
YES
Add the remote module to the router interface list associated with the multicast stream
1118
Forward the IGMP query message to all network interfaces
1120
END
1199

FIG. 11 1100

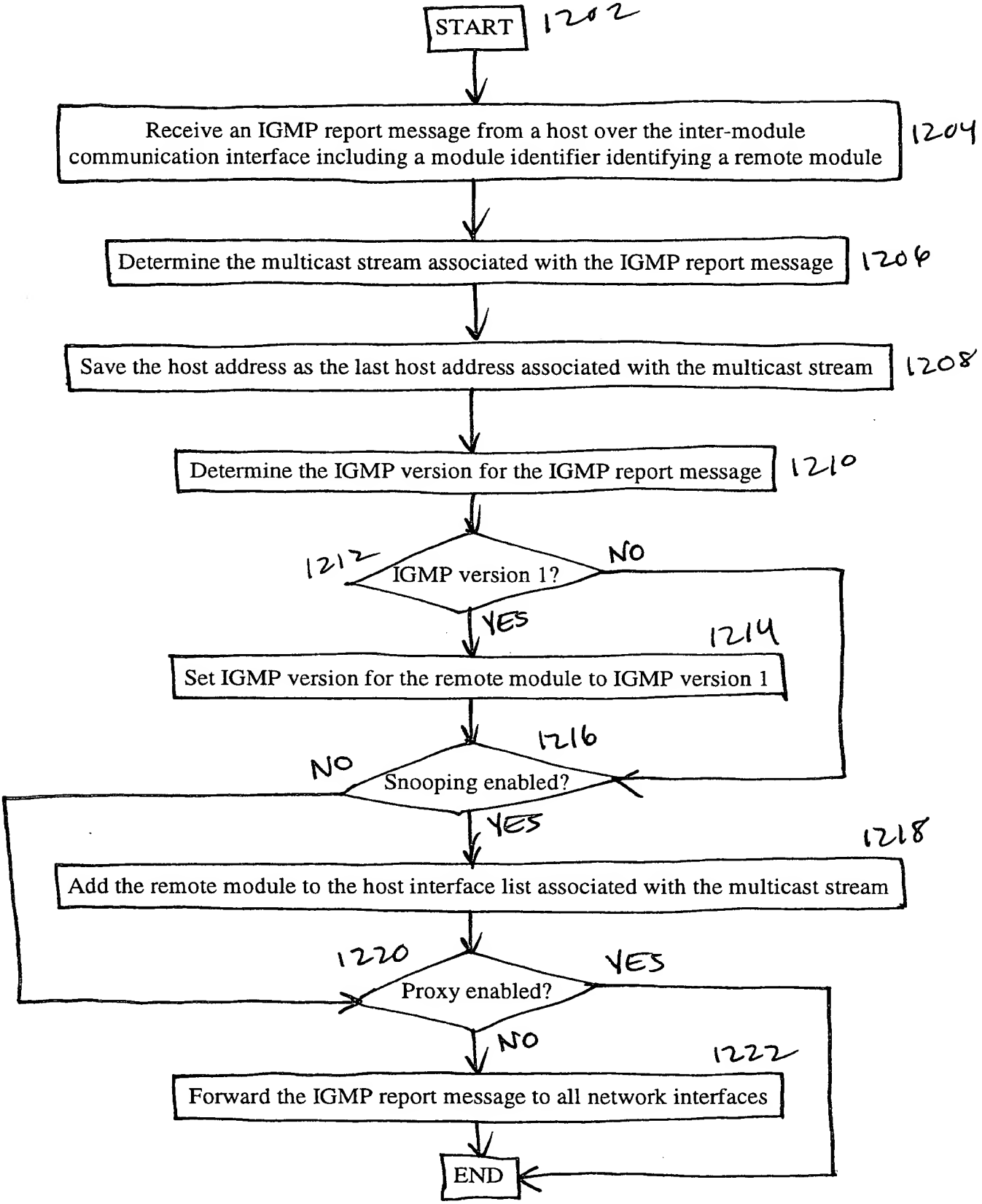
START
1202
Receive an IGMP report message from a host over the inter-module communication interface including a module identifier identifying a remote module
1204
Determine the multicast stream associated with the IGMP report message
1206
Save the host address as the last host address associated with the multicast stream
1208
Determine the IGMP version for the IGMP report message
1210
1212
IGMP version 1?
NO
YES
1214
Set IGMP version for the remote module to IGMP version 1
1216
NO
Snooping enabled?
YES
1218
Add the remote module to the host interface list associated with the multicast stream
1220
Proxy enabled?
YES
NO
1222
Forward the IGMP report message to all network interfaces
END

FIG. 12 1200

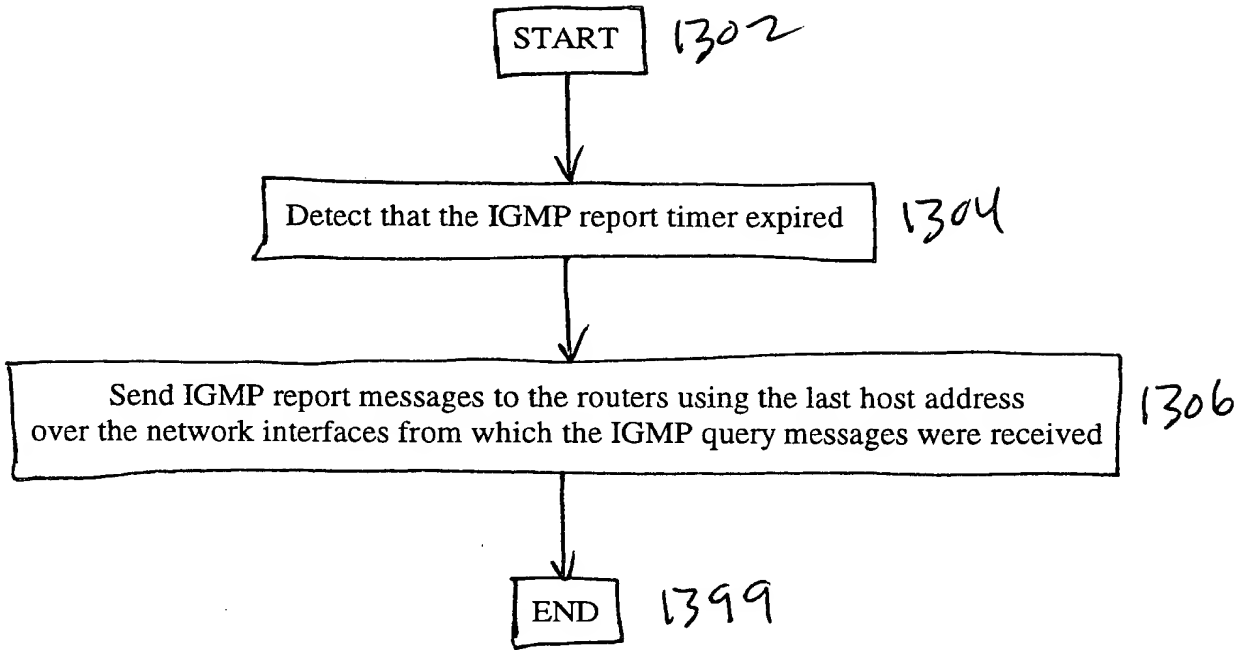
START
1302
Detect that the IGMP report timer expired
1304
Send IGMP report messages to the routers using the last host address over the network interfaces from which the IGMP query messages were received
1306
END
1399

FIG. 13 1300

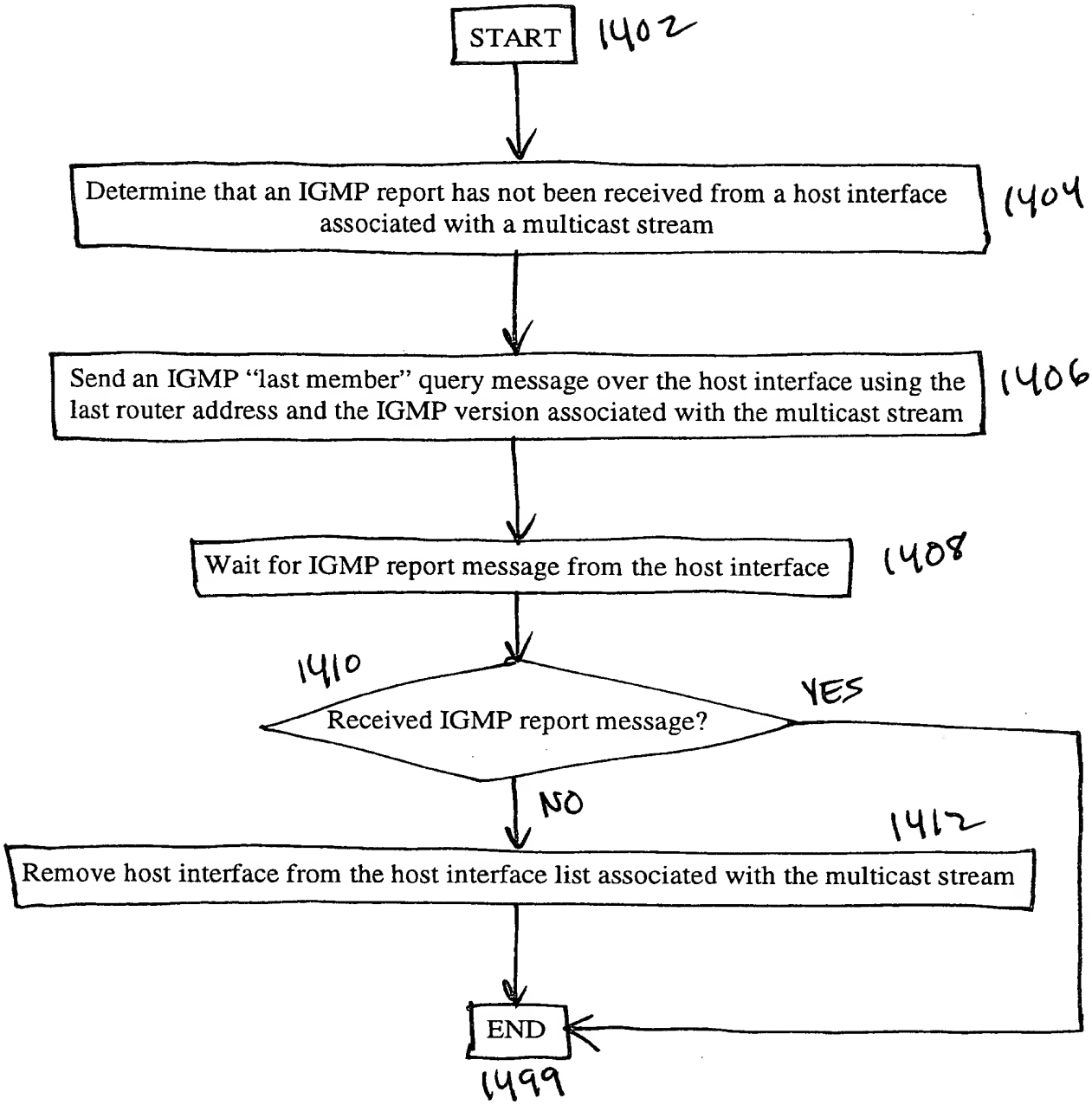
START
1402
Determine that an IGMP report has not been received from a host interface associated with a multicast stream
1404
Send an IGMP "last member" query message over the host interface using the last router address and the IGMP version associated with the multicast stream
1406
Wait for IGMP report message from the host interface
1408
1410
Received IGMP report message?
YES
NO
1412
Remove host interface from the host interface list associated with the multicast stream
END
1499

FIG. 14 1400

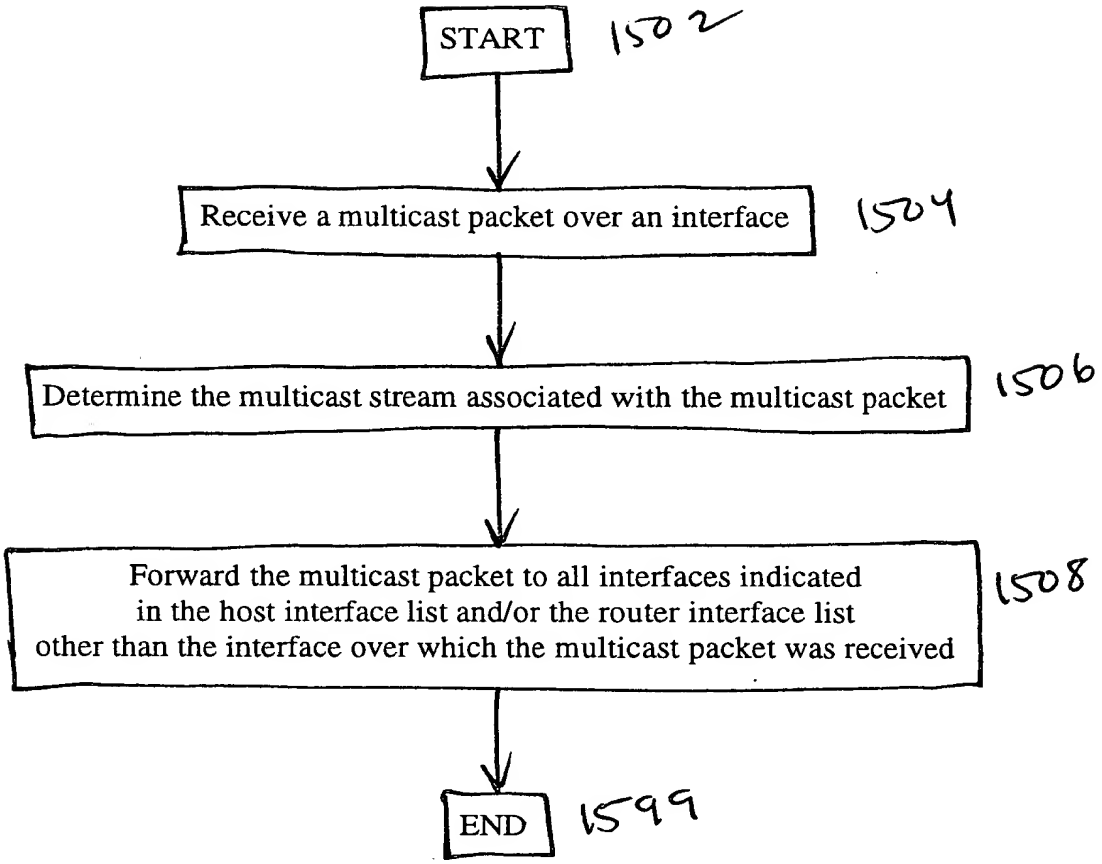
START
1502
Receive a multicast packet over an interface
1504
Determine the multicast stream associated with the multicast packet
1506
Forward the multicast packet to all interfaces indicated in the host interface list and/or the router interface list other than the interface over which the multicast packet was received
1508
END
1599

FIG. 15 1500

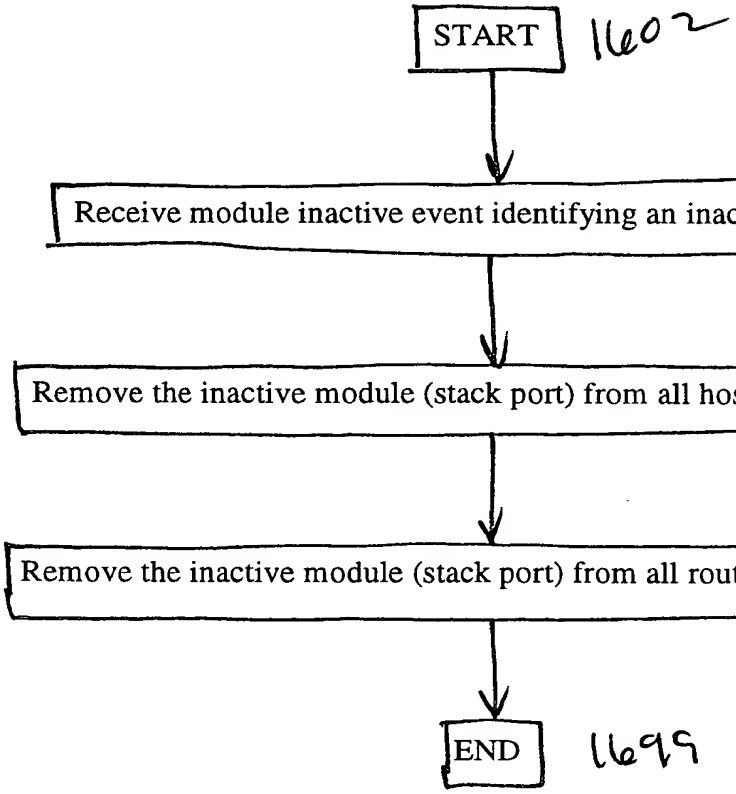
START
1602
Receive module inactive event identifying an inactive module
1604
Remove the inactive module (stack port) from all host interface lists
1606
Remove the inactive module (stack port) from all router interface lists
1608
END
1699

FIG. 16 1600

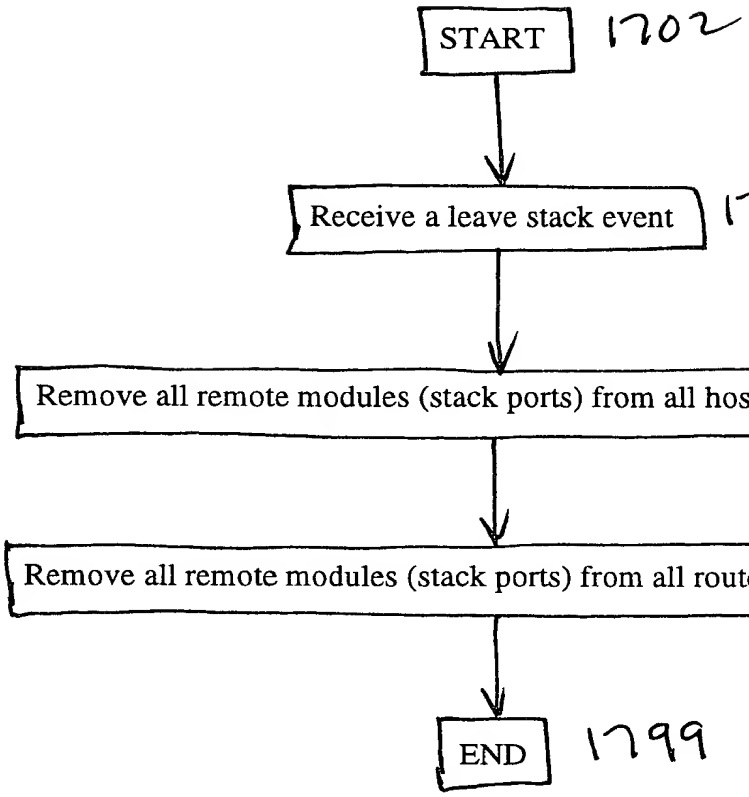
START
1702
Receive a leave stack event
1704
Remove all remote modules (stack ports) from all host interface lists
1706
Remove all remote modules (stack ports) from all router interface lists
1708
END
1799

FIG 17 1700